lesions (either bony or subcutaneous),
or a history of 'attacks' consistent with
gout.

While a review of the literature
revealed reports of solitary bony
lesions of intraosseous gout,1-3 no
report of a solitary bone lesion without
some other stigmata or substrate of the
disease could be found. A more common
differential diagnosis of aggressive
solitary bony lesions includes
osteomyelitis, sterile abscess, and
neoplasm. Based on this case report,
intraosseous gout without the customary
substrate should be added to the
list.

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PSEUDOANEURYSM
FOLLOWING FEMORAL
FRACTURE

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Post-traumatic pseudoaneurysm following femoral fracture is rare. This
reports documents a case in which a
pseudoaneurysm developed in a branch
of the profunda femoris artery following
a femoral diaphyseal fracture. Early
recognition and treatment of this disorder
are emphasized and a literature
review is provided.

CASE REPORT

A healthy 27-year-old man presented to
the emergency department with bilateral
femoral fractures resulting from a fall from a
balcony. The right femur fracture was noted to
be at the mid-diaphyseal level (Fig 1), and a
commuted fragment was visible. The left
fracture was infra-isthmic.

Physical examination revealed a closed
soft-tissue envelope with moderate bilateral
swelling. Strength of the tibialis anterior and
the extensor hallucis longus was 1/5 on the left
and 2/5 on the right. This was thought to be
secondary to pain. Closed bilateral locked
femoral raiings were performed.

Postoperatively, the patient was stable, his
wounds healed, and there were no immediate
neurovascular changes. Activity consisted of
only transfers, and a non-weight bearing status
was maintained. The patient was discharged 7
days following admission.

The patient returned to the emergency
department 1 week after discharge and two
weeks following the injury complaining of a
painful mass over the anterolateral aspect of
his right femur. According to the patient, the
mass began to enlarge 9 days following the
injury.

Examination revealed an indurated 7-cm
mass without erythema or warmth. There was
no palpable thrill, but a minimal bruit was
appreciated on auscultation. A duplex ultra
sound revealed a pseudoaneurysm adjacent to
the fracture site. An arteriogram showed the

Fig 1: Femoral fracture after nailing.

Fig 2: Arteriogram showing a pseudo
aneurysm originating from a large muscular
branch of the profunda femoris artery.

Fig 3: Resected pseudoaneurysm.

pseudoaneurysm originating from a muscular
branch of the profunda femoris artery (Fig 2).

The pseudoaneurysm was resected the fol
owing day (Fig 3) and the vessel was repaired
primarily. The procedure was tolerated well,
and the patient was discharged 4 days post-
ressection. Nine months after surgery, the mass
has not returned and the pseudoaneurysm site
remains asymptomatic. The fractures healed
well, and the tibialis anterior and extensor hal-
lucis longus strength were 5/5 bilaterally, thus
confirming that the initial weakness was
cased by pain and guarding.

DISCUSSION

There is a paucity of reported cases
concerning post-fracture pseudo-
aneurysm formation following femoral
diaphyseal fractures. Shah and Ellis1
reported a case with injury to the
superficial femoral artery in a pediatric patient who sustained a transverse femoral diaphyseal fracture. This was diagnosed 10 days post-injury while the 11-year-old patient was being treated in traction.

Rao and Lapilusa reported the development of a pseudoaneurysm of the superficial femoral artery following a closed distal femoral fracture. This fracture was treated with skeletal traction. A nonpulsatile mass was noted in the area of the fracture 4 weeks after the injury, but angiography and diagnosis were delayed for 3 months. The aneurysm was resected and a Dacron graft placed.

Other authors have reported isolated cases of pseudoaneurysm following femoral fracture and commented on its rare occurrence. Clinical findings vary and may be present with or without bruits, thrills, or systemic hemodynamic changes. Typical distal pulses are normal. Occasionally, peripheral neurologic changes are apparent. Delayed union, especially in those fractures treated closed, was not uncommon.

Pseudoaneurysm formation is initiated by full-thickness laceration of the artery into its lumen. A hematoma forms a clot and then is encapsulated by fibrous tissue. The hematoma liquefies and the sac then becomes confluent with the artery. In this case report, vessel lumen laceration may have been caused by a small spike of bone.

Diagnosis is typically delayed for weeks to months. In this case, the mass did not begin to enlarge until 9 days after the injury. Often, the lack of findings in combination with the infrequency and low suspicion of a pseudoaneurysm are the case. Unfortunately, this delay can cause further morbidity by compressing local structures or by allowing further expansion of the lesion with greater vessel damage. Hence, the best means of detection remains a high level of suspicion and a low threshold for commencing work-up.

Noninvasive diagnosis of vascular lesions by duplex ultrasonography has proven to be 98% accurate. This study is an excellent means of screening if one has any suspicion of a pseudoaneurysm. Preoperative angiography is helpful for further defining the exact size and location of the pseudoaneurysm. Barnes and Broude also advocate selective transarterial embolization while undergoing angiography, especially for more distal lesions.

SUMMARY

If the physician is aware of this diagnosis and maintains an appropriate level of suspicion and low threshold to commence duplex evaluation. The potential morbidity of a fracture-induced traumatic pseudoaneurysm can be minimized.

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REMOVAL OF A BROKEN SOLID-CORE INTRAMEDULLARY FEMORAL NAIL USING BOTH ANTEGRADE AND RETROGRADE STARTING POINTS

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Removal of broken intramedullary nails from nonunited femoral fractures has been described in previous case reports and one series. Nearly all of these descriptions have involved removal of a slotted, cloverleaf nail with a hook device. The only significantly different method involves wedging a smaller diameter slotted nail into the distal fragment and extracting it by gently tapping the smaller nail from the canal.

This report describes a unique situation in which a solid-core, 9-mm nail had been inserted in a retrograde manner through the intercondylar notch of the distal femur. This nail subsequently broke at the proximal interlocking screw hole nearest the fracture site. The small proximal tip of the nail was removed by opening the medullary canal proximally at the piri-form fossa and then driving the piece out of the canal in a retrograde manner.

CASE REPORT

A 22-year-old man was involved in a motor vehicle accident in which he sustained an isolated femoral fracture at the junction of the middle and proximal thirds of the shaft. On the basis of this injury, he was entered into an ongoing, prospective study of the placement techniques of femoral nails and was randomly assigned to the retrogade method of insertion.

The surgical procedure was performed with manual traction on a fluoroscopy table. A medi-parapatellar arthroscopy was performed to visualize the appropriate starting point in the intercondylar notch. The canal was opened and a 9-mm Unreamed Femoral Nail (Synthes, Paoli, Pa) was inserted into the canal without